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1942

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INTRODUCTION

The safety of merchant seamen was one of the principal subjects of discussion at the Twelfth Session of the Joint Maritime Commission of the International Labour Office, which was held in London from 26 to 30 June 1942.¹ The Commission met under the Chairmanship of Sir Frederick W. Leggett, C.B., Deputy Secretary of the British Ministry of Labour and National Service (acting for Professor Carter Goodrich, Chairman of the Governing Body of the International Labour Office), accompanied by Sir John Forbes Watson and Mr. Joseph Hallsworth, representing respectively the employers' and workers' members of the Governing Body, and included nine representatives of shipowners' organisations and nine of organisations of ships' officers and seamen. The shipowners' and seafarers' members of the Commission were drawn from the merchant navies of eleven different countries, and if account is taken of the deputy members, substitutes and advisers who also took part in the proceedings the number of nationalities is increased to fifteen. The Commission was thus not only professionally competent but also very widely representative—remarkably so in view of the fact that it met during a world war.

The Commission had before it, as a basis for its discussion on safety at sea, a survey prepared by the International Labour Office which gave a comparative summary of the rules on life-saving appliances applicable to foreign-going cargo vessels of the merchant navies of Great Britain, the United States of America, the Netherlands and Norway.² This survey dealt with the rules of these countries as they stood at about April 1942. The British Ministry of War Transport, which at the time the Commission met had almost completed a revision and consolidation of its war-time safety appliance rules, was good enough to make available to the Commission full information concerning the new and amended rules it was about to issue.³ In the light of all this information,

¹ For a brief account of the proceedings of the Commission, see *International Labour Review*, Vol. XLVI, No. 2, August 1942.

² *International Labour Review*, Vol. XLV, No. 6, June 1942: "The War and Merchant Seamen: II—Life-Saving Appliances".

³ The Ministry also arranged, in the premises in which the Commission met, a life-saving exhibition, including actual appliances and equipment and models and diagrams, which was of very great value to the Commission.

supplemented of course by members' own first-hand knowledge of existing conditions and requirements, the Commission adopted unanimously three resolutions on safety at sea, the texts of which are reproduced in Part I of this memorandum.

These resolutions, with others adopted by the Commission, were communicated to the Governments of the Members of the International Labour Organisation by letter despatched (under authority given by the Emergency Committee of the Governing Body of the Office) on 31 July 1942. It will be seen from the text given in Part I of this booklet that in clause (a) of the first of these resolutions the Commission requested the Office to "communicate to Governments as soon as possible . . . a summary statement of the life-saving measures best calculated to protect merchant seamen in time of war". This booklet has been compiled in compliance with the Commission's request. Although the Commission was not able in the time at its disposal, to consider fire-fighting appliances, it has been thought desirable to include some information on this subject as well as on life-saving appliances; this information is given in Part III.

The statement, which it is evident could not have been compiled without the generous assistance of the British Ministry of War Transport in supplying published material and giving explanations on points of detail, presents—it is believed for the first time in such a form—a concise exposition of the latest rules for the protection of the lives of merchant seamen in time of war, which will no doubt also serve as a basis for any revision of such rules, nationally and internationally, which may take place when peace is restored. It is published by the Office in the hope that it will be of service and interest not only to Governments but also to all others who are concerned for the well-being of seamen and that it will constitute a practical tribute to the work carried on unflinching, despite all dangers, by the men of the merchant navies of the world.

September, 1942.

PART I

RESOLUTIONS ON SAFETY MEASURES FOR SEAMEN ADOPTED UNANIMOUSLY BY THE JOINT MARITIME COMMISSION AT ITS TWELFTH SESSION, LONDON, 26-30 JUNE 1942

I

The Joint Maritime Commission,

Having examined the measures now in force in a number of countries for the protection of seamen against the dangers to which they are exposed in time of war, and having noted with satisfaction the great progress made as a result of the war in devising effective safety measures,

Expresses its conviction that the paramount consideration should in all cases be the safety of the seamen and that considerations of expense should not be allowed to be a barrier to the adoption of the most effective measures of protection.

The Commission further considers that every effort should be made to secure the adoption by all maritime countries of the safety measures which experience has shown to be practicable and effective.

The Commission requests the International Labour Office:

(a) To communicate to Governments as soon as possible, on the basis of the existing practice in the countries having the widest experience in this matter and of the suggestions for further improvements set out in the Appendix to this Resolution, which have been approved by the Commission, a summary statement of the life-saving measures best calculated to protect merchant seamen in time of war, and to urge them to review and revise their existing regulations on the matter in the light of the information thus given in order that a high and reasonably uniform standard of safety may be ensured for all seamen;

(b) To continue its study of the question of measures for the protection of seamen in case of shipwreck, fire and other perils in order that the requisite information may be available and un-

necessary delay be avoided when conditions permit consideration of the possibility of adopting an international labour Convention on safety measures for seamen;

(c) To recommend Governments to consider entering into reciprocal arrangements under which a national authority will be authorised to carry out, on its own initiative or on the representations of the crew concerned, inspection of the safety equipment of a ship of foreign registration lying in a port within the jurisdiction of that authority and to issue an international certificate of inspection.

APPENDIX

(1) On vessels of not less than 3,000 tons gross the lifeboats provided should include one motor lifeboat on each side, adequately provided with fuel.

(2) The use of the radial type of davit should be discontinued at the earliest practicable opportunity and all new tonnage should be fitted with davits mechanically operated for the purpose of swinging lifeboats outboard.

(3) On new vessels pumps, particularly main and circulating pumps, which discharge above the light load line should be fitted with remote control valves for shutting them down. These controls should be located near to the remote control for the main engines. The same arrangements should be applied to existing ships as and when practicable.

(4) On tankers carrying inflammables all lifeboats should be of steel and some life-rafts should be carried aft in the ship.

(5) Expeditious investigation should be made into the design of the best hull form and weather protection for lifeboats.

(6) Nails should not be used in the construction of wooden life-rafts.

(7) Expert consideration should be given to the advisability of equipping lifeboats with radio transmission sets capable of transmitting on short wave lengths as well as on 600 metres.

(8) Definite and adequate arrangements should be made for the position of an abandoned ship to be communicated to those in charge of boats.

(9) Every lifeboat should carry a waterproof chart, or alternatively a chart in a waterproof container, for use in the vicinity in which the ship is sailing.

(10) Adequate visibility of the lifeboat compass should be ensured by the use of luminous compass-cards or by effective illumination.

(11) Every lifeboat should be provided with signal pistol equipment.

(12) The greatest possible use should be made of the space available in lifeboats for the carriage of water and every care should be taken to see that the water supplies are replenished when necessary.

(13) Buoyant containers with supplies of fresh water should be carried on board ship in close proximity to the lifeboats and so arranged that they will readily float free of the ship.

(14) Every lifeboat should be provided with a unit type first-aid kit in a weather-tight metal container.

(15) Before a vessel leaves its first port of departure fire and boat drills should be held and all life-saving appliances should be inspected. Drills should also be held before leaving any port at which any important change has been made in the crew. Every drill and inspection should be entered in the log book.

II

The Joint Maritime Commission agrees that it is important in wartime in the interests of safety that officers and ratings should where practicable have reasonable rest before going on watch prior to sailing.

III

Having agreed to many improvements to the existing standard and methods employed in the saving of life at sea and in view of the urgency of their immediate application, members of this Joint Maritime Commission further pledge themselves that they will immediately do all in their power to ensure that such decisions become operative at the earliest possible date.

PART II

SUMMARY STATEMENT OF LIFE-SAVING MEASURES PREPARED BY THE INTERNATIONAL LABOUR OFFICE IN COMPLIANCE WITH THE REQUEST OF THE JOINT MARITIME COMMISSION

The life-saving appliance rules of the principal maritime countries show, of course, a considerable degree of uniformity. So far as passenger ships are concerned, almost all maritime countries have bound themselves to comply with the requirements of the International Convention for the Safety of Life at Sea of 1929. There is not yet any such international agreement for non-passenger ships, but the practice of the leading countries has naturally exerted a strong influence on that of others, and when the exigencies of the war revealed the inadequacies of the pre-war rules to cope with new and intensified perils there was a tendency towards still greater uniformity between the various national rules, each country showing itself eager to profit by the experience and experiments of the others. The war-time rules applicable to the British merchant navy represented the practice of the country having the widest experience in the matter and, in their revised form, were the latest rules available to the Joint Maritime Commission. The discussions of the Commission were thus largely based on the British rules, and these have therefore been taken as the basis of the following statement. The method of presentation is explained below.

The British rules consist of (1) The Merchant Shipping (Life-Saving Appliances) Rules¹, dated 14 November 1938, made by the Board of Trade and (2) The Merchant Shipping (Life-Saving Appliances) Emergency Rules, 1942², dated 27 July 1942, made by the Minister of War Transport. The later rules, which came into operation on 10 August 1942, are supplemental to the rules made in 1938, codifying and amplifying rules issued at various dates since the outbreak of the war but not revoking the pre-war rules. It has therefore been necessary to select such of the 1938 rules

¹ Statutory Rules and Orders, 1938, No. 1375 (referred to in the 1942 Rules as "the Principal Rules").

² Statutory Rules and Orders, 1942, No. 1519.

as are still operative, either generally or in respect of particular classes of ships, and to correlate these with the 1942 rules dealing with the same matters.

It has also been necessary to make a selection from the 1938 rules on another ground. Life-saving appliances rules are naturally not uniform for all classes of ships. The 1938 rules classify ships in seventeen different classes, and an additional class has been added since the outbreak of the war.¹ Some of the rules apply to all classes of ships, but many apply only in respect of a particular class or classes. The classes dealt with in this statement are as follows:

PASSENGER SHIPS

- | | |
|------------|---|
| Class I. | Steamships carrying more than 12 passengers on international voyages other than ships of Class II. |
| Class II. | Steamships carrying more than 12 passengers on short international voyages. |
| Class III. | Home Trade steamships carrying more than 12 passengers on passages or voyages other than international voyages. |
| Class IV. | Steamships carrying passengers in pursuance of a passenger certificate entitled "Passenger Certificate for a Home Trade passenger vessel plying on short excursions to sea, <i>i.e.</i> beyond partially smooth water limits, between 1st April and 31st October inclusive, during daylight and in fine weather". |
| Class V. | Steamships carrying passengers in pursuance of a passenger certificate entitled "Passenger Certificate for a vessel plying in partially smooth water". |
| Class IX. | Foreign-going sailing ships carrying more than 12 passengers. |
| Class X. | Home Trade sailing ships carrying passengers. |

NON-PASSENGER SHIPS

- | | |
|-------------|---|
| Class XI. | Foreign-going steamships not certified to carry passengers. |
| Class XII. | Home Trade steamships not certified to carry passengers. |
| Class XIII. | Steam fish carriers, tugs, lighters, dredgers, barges, hoppers and hulks, which proceed to sea. |
| Class XV. | Foreign-going sailing ships not carrying more than 12 passengers. |

¹ By Regulation 47BB of the Defence (General) Regulations, 1939 (S.R. & O. 1941, No. 2011, II).

- Class XVI. Home Trade sailing ships not carrying passengers.
- Class XVII. Fishing boats within the meaning of Section 370 of the Merchant Shipping Act, 1894.
- Class XVIII. Ships in respect of which a certificate issued by the competent authority under Regulation 47BB of the Defence (General) Regulations, 1939, is in force. (These are non-passenger steamers which, subject to certain conditions, are permitted to carry passengers without being deemed to be passenger steamers for the purposes of any of the provisions of the Merchant Shipping Acts, 1896 to 1940, or of any rules or regulations made thereunder.)

The following classes, which obviously form a different group and do not come within the scope of the 1942 Rules, are not dealt with in this statement:

- Class VI. Steamships carrying passengers in pursuance of a passenger certificate entitled "Passenger Certificate for a vessel plying in smooth water in estuaries and lakes".
- Class VII. Steamships carrying passengers in pursuance of a passenger certificate entitled "Passenger Certificate for a vessel plying in smooth waters on rivers and canals".
- Class VIII. Steam launches and motor boats carrying passengers in pursuance of a passenger certificate entitled "Passenger Certificate for a vessel plying for short distances to sea".
- Class XIV. Steam fish carriers, tugs, lighters, dredgers, barges, hoppers and hulks, which do not proceed to sea.

The various rules have been arranged in groups, and for each heading in these groups an indication is given of the date of the rules quoted, the number of the rule, and the class or classes of ships to which the rule applies ('all ships' meaning, in these references, ships of all the classes dealt with in the statement but not necessarily of all eighteen classes). The provisions of the rules relating to the numbers of lifeboats to be carried have been summarised, for the sake of brevity and clarity, but in general the actual text of the rule is quoted (wherever 'Board of Trade' appears in a quotation from the 1938 rules, 'Minister of War Transport' should now be read).

Where the Joint Maritime Commission made a specific recommendation on a particular subject the recommendation is quoted immediately after the relevant rule. It will be seen that in many cases the 1942 rules already make the provision recommended by the Commission or an alternative thereto.

The rules frequently mention an 'approved' appliance without giving a detailed specification of the requirements for approval. This is in accordance with an established practice which permits of a certain degree of flexibility in the methods adopted to give effect to a rule and facilitates rapid adaptation of requirements as experience shows the need for modifications or new devices become available. The requirements for approval under the 1938 rules, which are many and detailed, are published in the 'Instructions as to the Survey of Life-Saving Appliances' issued in 1936, and in Supplement No. 1 thereto (which includes the complete text of the 1938 rules). Additional requirements for approval under the 1942 rules have been specified in various memoranda issued by the Ministry of War Transport and its predecessors; in some cases the Ministry's specifications refer by name to appliances supplied by particular manufacturers, while in others details are given. These memoranda also include a certain number of recommendations supplementing the rules. Where additional information seemed desirable for the proper appreciation of the practical effect of a rule and could conveniently be given by a quotation from a memorandum of the Ministry, a reference has been added from the text of the rule to the numbered extracts from these Memoranda given in Appendix I.

A comparison of the revised British rules with the war-time rules of the Netherlands, Norway and the United States of America as they stood in April 1942, on which also the Joint Maritime Commission had information before it, shows that there are few matters on which the rules of these countries set a higher standard than, or differ materially from, the latest British rules, with the exception of the substantially higher space allowance in lifeboats required by the Norwegian rules. This and other, minor, differences between the rules of the four countries are indicated in references from the relevant British rules to Appendix II.

Finally, it should be stated that the 1938 rules contain a provision empowering the Board of Trade to allow certain variations of the prescribed requirements and to grant certain exemptions, in both cases subject to such conditions as it may think fit to impose. The 1942 rules include the following provision, designed to meet cases of real difficulty in full compliance with the requirements of the rules:

The Minister or any Surveyor of Ships or other person duly authorised in that behalf by the Minister may exempt, subject to such conditions as he thinks fit to impose, any ship, for the period of any voyage or voyages, from compliance with any requirements of these Rules, if he is satisfied that the requirement is either impracticable or unreasonable having regard to all the circumstances of the case.

A.—Structural Arrangements, Appliances and Gear and Personal Equipment to be carried on Board Ship

MEANS OF INGRESS AND EGRESS

1938—43 (Passenger ships only).

(1) Proper arrangements shall be made to the satisfaction of the Board of Trade on all passenger ships for ingress to and egress from the different compartments and decks.

1942—26 (All ships).

Every ship shall be provided with suitable alternative means of escape from machinery and crew spaces which shall include at least one wire rope step ladder in engine rooms, stokeholds and crew's companion ways. In addition the engine room ventilators shall, where practicable, be suitably adapted to provide a ready means of escape to the boat deck.

LIGHTING

1938—43 (Classes I and II).

(2) Provision shall be made on all ships of Classes I and II for an electric or other system of lighting, sufficient to the satisfaction of the Board of Trade for all requirements of safety, in the different parts of the ship, and particularly upon the decks on which the boats are stowed. On ships in which the boat deck is more than 30 feet above the waterline at the lightest sea-going draught, provision shall be made for the illumination from the ship of the boats when alongside and in process of or immediately after being launched. There must be a self-contained source of

power capable of supplying, when necessary, this safety lighting system, and placed in the upper parts of the ship above the bulk-head deck.

(3) In ships of Classes I and II the exit from every main compartment occupied by passengers or crew shall be continuously lighted by an emergency lamp. The power for these emergency lamps shall be so arranged that they will be supplied from the source of power referred to in paragraph (2) of this rule in the event of failure of the main generating plant.

1942—24 (All ships).

(1) Provision shall be made in every ship for an efficient system of alternative lighting which shall be available for immediate use in the event of failure of the main and emergency (if any) lighting installations of the ship.

(2) The alternative lighting system shall consist of approved self-contained electric hand-lamps or torches in such number and placed in such positions as shall be reasonably sufficient for the requirements of safety.¹

EMERGENCY CONTROLS FOR ENGINES AND PUMPS

1942—25 (All ships).

(1) In every ship suitable provision shall be made to enable the main engine, and pumps liable to discharge into the lifeboats during launching operations, to be stopped by means of emergency controls conveniently sited outside the engine room.

(2) Such emergency controls shall be kept in efficient working order and their positions shall be made known to deck officers in addition to the engineer officers.

Commission Recommendation 3. On new vessels pumps, particularly main and circulating pumps, which discharge above the light load line should be fitted with remote control valves for shutting them down. These controls should be located near to the remote control for the main engines. The same arrangements should be applied to existing ships as and when practicable.

LEAK-STOPPING GEAR

1942—27 (All ships).

Every ship shall carry a supply of suitable materials for dealing with leakages, such as softwood plugs and wedges, timber for shores,

¹ See note 1, p. 43.

cement boxes, canvas, oakum, tarpaulins or collision mats and bottom lines. Such materials are to be kept readily available for immediate use.

LINE-THROWING APPLIANCES

1938—4 to 8, 12 to 16, 18 to 20, and 41 (*Classes I to V, IX to XIII, XV to XVII*).¹

4 etc.—Every ship to which this rule applies shall carry an approved type of line-throwing appliance.

41 (11)—(1) An approved line-throwing appliance shall consist of

(a) four line-throwing rockets with sticks or other approved apparatus capable of throwing a line $\frac{1}{2}$ -inch in circumference a minimum distance of 200 yards in calm weather in such a manner that the lateral deflection of line on either side of the direction of firing does not exceed 10 per cent. of the length of flight of the rocket (provided that in the case of ships of less than 500 tons gross tonnage four rockets with sticks or other approved apparatus capable of throwing a line $\frac{1}{2}$ -inch in circumference a minimum distance of 120 yards in calm weather in such a manner that the lateral deflection of the line on either side of the direction of firing does not exceed 10 per cent. of the length of flight of the rocket may be substituted); and

(b) four lines $\frac{1}{2}$ -inch in circumference each not less than 240 yards in length and having a breaking strain of not less than 250 lbs. (provided that in the case of apparatus for use on ships of less than 500 tons gross tonnage lines $\frac{1}{2}$ -inch in circumference each not less than 150 yards in length and having a breaking strain of not less than 250 lbs. may be substituted).

(2) The rockets with the means of igniting them and the lines shall be kept in a watertight case.

1942—22 (*Class XVIII*).

Every ship of Class XVIII shall carry an approved type of line-throwing appliance.

¹ The application of this rule is restricted as follows in the case of certain classes of ships:

Classes XII, XV and XVI—Applicable only on ships of 80 tons gross tonnage and upwards.

Class XVII—Applicable only to ships of 50 feet or over in length.

Class XIII—The Board of Trade may in their discretion relieve a ship which proceeds only for short distances to sea wholly or partially from the operation of the provisions of the rules for ships of Class XII which would otherwise be applicable to ships of this class.

LIFEBUOYS

1938—4, 5 and 6, and 39 (*Classes I, II and III*).¹

4 (9) etc.—Every ship to which this rule applies shall carry at least the number of lifebuoys determined in accordance with the following table:

Length of Ship	Minimum number of lifebuoys
Under 200 feet.....	8
Not under 200 feet but under 400 feet.....	12
Not under 400 feet but under 600 feet.....	18
Not under 600 feet but under 800 feet.....	24
800 feet and over.....	30

39—(1) (a) An approved lifebuoy shall be of solid cork or other approved material and shall be capable of floating in fresh water for at least 24 hours with 32 lbs. of iron suspended from it.

(b) No lifebuoys filled with rushes, cork shavings, granulated cork or any other loose granulated material, or whose buoyancy depends upon air compartments requiring inflation, shall be approved or carried.

(2) All lifebuoys shall be fitted with beackets securely seized, and at least one on each side of the ship shall be fitted with a life-line at least 15 fathoms in length.

1942—23 (*All ships*).

(1) Every ship of 100 feet or more in length shall carry at least eight approved lifebuoys, and if under 100 feet in length shall carry at least four approved lifebuoys.

(2) At least half the lifebuoys required by this Rule shall be provided with an approved buoyant self-igniting light which shall be attached to the lifebuoy to which it belongs; two of the remaining lifebuoys required by this Rule shall be fitted with a line at least fifteen fathoms in length.

(3) Self-igniting lights provided in accordance with the foregoing provisions of this Rule in any ship which is an oil tanker, motor ship or oil-fuelled ship shall be of the electric battery type.

¹ The 1938 rules relating to other classes of ships also require the carrying of lifebuoys, but in numbers less, or not greater, than the numbers required on all ships by the 1942 rules.

14 WARTIME LIFE-SAVING MEASURES FOR MERCHANT SEAMEN

LIFE-JACKETS, LIFE-SAVING WAISTCOATS AND PERSONAL EQUIPMENT

1938—4 to 8, 12 to 16, 18 to 20, and 38 (*All ships*).¹

4 (10) etc.—Every ship to which this rule applies shall carry one approved life-jacket for each person on board.

38—(1) An approved life-jacket shall mean a jacket or other approved appliance capable of being fitted on the body, of approved material and construction, which is capable of floating in fresh water for at least 24 hours with 16½ lbs. of iron suspended from it. It shall be reversible and suitable both for adults and children.

(2) No life-jackets shall be approved or carried the buoyancy of which depends on air compartments.

1942—20 (*All ships, except as indicated*).

(1) Every ship of Class XVIII shall carry one approved life-jacket for every person on board.

(2) Every person on board a ship of Class XVIII and every member of the crew of every other ship shall be provided with a life-saving waistcoat or alternative appliance of approved material, construction and efficiency which shall be suitable for wearing on the body whilst employed on deck or in other duties about the ship.

The life-saving waistcoats or alternative appliances to be provided in pursuance of this rule shall be in addition to the approved life-jackets required to be carried in pursuance of the principal rules and these rules.²

(3) Every person on board any ship except ships of Classes IV and V, shall be provided with an electric light of approved material, construction and efficiency which shall be suitable for use with a life-jacket or with a life-saving waistcoat.³ Each such light shall be fitted with a globe tinted red and with an electric battery of an approved type and capacity. In addition every such ship shall be provided with a reserve of such lights equivalent to at least 10 per cent. of the total number of the members of the crew carried therein, together with an additional number of spare batteries and bulbs equivalent to 20 per cent. of such total number.

¹ Class XIII—The Board of Trade may in their discretion relieve a ship which proceeds only for short distances to sea wholly or partially from the operation of the provisions of the rules for ships of Class XII which would otherwise be applicable to ships of this class.

² See note 2, p. 43.

³ See note 3, p. 43.

(4) Every person on board any ship of Classes I, IX, XI, XV and XVIII shall be provided with a suit of protective clothing of approved type designed for carriage on the person and suitable for wear in a lifeboat or emergency raft. In addition a reserve supply of such suits shall be carried equivalent to 10 per cent. of the total number of the members of the crew carried in the ship.¹

(5) In all ships each officer and every supervising deck rating shall be provided with a jack-knife fitted with a tin-opener.

(6) In all ships each member of the crew shall be provided with a whistle with a lanyard attached.

STOWAGE OF LIFEBUOYS AND LIFE-JACKETS

1938—40.

(1) All lifebuoys and life-jackets shall be stowed to the satisfaction of a Board of Trade Surveyor and so as to be readily accessible to the persons on board; their position shall be plainly indicated so as to be known to the persons concerned.

(2) Lifebuoys shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

EMBARKATION LADDERS AND NETS

1938—42 (*Classes I to IV, IX to XII, XV and XVI*).

(1) Suitable arrangements as required by the Board of Trade shall be made on ships of Classes I, II and III for embarking the passengers in the boats at an embarkation deck. Ships of Class I shall be provided throughout the ship with electrically operated signals controlled from the bridge for summoning passengers to muster stations.

(2) All ships of Classes I, II, III and IV shall carry not less than one ladder of an approved type at each set of davits. Ships of Classes IX, X, XI, XII, XV and XVI shall carry at least one ladder of an approved type for every two sets of davits. The ladders shall be of sufficient length to reach the waterline with the ship at her lightest sea-going draught and listed to 15 degrees either way, and shall be carried in such a manner as to be always available for use in embarking the persons in the boats or life-rafts.

1942—21 (*All ships, except as indicated*).

(1) Every ship except ships of Classes XVII and XVIII shall

¹ See note 4, page 44.

carry two rope side ladders, in addition to those carried in compliance with rule 42 (2) of the principal rules. Such additional ladders shall be stowed on the weather deck, one near each end of the ship. Ships of Class XVIII shall carry one rope side ladder at each set of davits.

(2) Every ship except ships of Classes XVII and XVIII shall carry on each side of the ship a rope side net to facilitate entry into the boats when waterborne. Ships of Class XVIII shall carry one rope side net at each set of davits.

(3) In all ships the number of persons permitted to be carried in any boat during the process of launching shall not exceed the number which having regard to the type and strength of the lowering appliances can with safety be so carried.¹

ABANDON-SHIP WARNING

1942—29 (*All ships*).

In every ship suitable arrangements shall be made for warning all members of the crew that the ship is about to be abandoned.

Commission Recommendation 8. Definite and adequate arrangements should be made for the position of an abandoned ship to be communicated to those in charge of boats.

GENERAL DIRECTION CONCERNING LIFEBOATS, ETC.

1938—3 (*All ships*).

(1) The lifeboats and buoyant apparatus in a ship shall be readily available in case of emergency and shall be adequate.

(2) To ensure that they are readily available, the lifeboats and buoyant apparatus shall comply with the following conditions:

(a) they must be capable of being put into the water safely and rapidly even under unfavourable conditions of list and trim;

(b) it must be possible to embark the passengers in the boats rapidly and in good order;

(c) the arrangement of each boat and article of buoyant apparatus must be such that it will not interfere with the operation of other boats and buoyant apparatus;

¹ In all new ships the Ministry arranges for the strength of the lowering appliances to be sufficient to enable the boat to be lowered while carrying its full crew.

(3) To ensure that they are adequate, the provision of lifeboats and buoyant apparatus shall be in accordance with the requirements of such of the following rules 4 to 20 as is applicable.¹

B.—Lifeboats

NUMBER TO BE CARRIED

1938—4 to 8, Schedules 1, 2 and 3 (Classes I to V).

The number of lifeboats to be carried, attached to davits or otherwise, on passenger ships is determined by the length of the ship. On ships of Class I the lifeboats must furnish sufficient accommodation for the total number of persons which the ship carries or is certified to carry, whichever number is the greater. On ships of Classes II and III, the lifeboats must be of a prescribed minimum aggregate capacity; if such lifeboats do not provide accommodation for all on board, approved life-rafts or approved buoyant apparatus must be provided to make good the deficiency. On ships of Classes IV and V, accommodation must be provided for prescribed percentages of the total number of persons which the ship is certified to carry and may be furnished in part by boats other than lifeboats and by buoyant apparatus. As the ships of these classes are all passenger ships, the details of the rules are not reproduced here.

1942—8 (Classes I and II).

In every ship of Classes I and II, where suitable stowage facilities are available, one or two lifeboats shall be carried in addition to the lifeboats required to be carried under the principal rules. Such additional lifeboats shall be stowed in chocks on the decks free to float off should the ship sink rapidly. Such lifeboats shall be provided with an approved buoyant self-igniting light of the electric battery type fitted with an uncoloured globe, which shall be attached externally to the boat in such a manner as to be free to operate immediately the boat is waterborne.

1938—12 to 16, 18 to 20 (Classes IX to XIII, XV to XVII).

The provisions of these rules are summarised in the following table:

¹ These rules are summarised in the following pages.

18 WARTIME LIFE-SAVING MEASURES FOR MERCHANT SEAMEN

Class of Ship	Aggregate capacity: persons to be accommodated	If accommodation as in col. 2 is to be provided on each side of the ship	Carriage at davits or otherwise
IX	All on board	No	At davits so far as in the opinion of the Board of Trade is practic- able
X	All on board	No	ditto
XI	All on board	Yes	At davits
XII			
100 feet or over in length	All on board	Yes	At davits
Under 100 feet in length	All on board	No	Stowed so that it can be read- ily placed in the water on either side of the ship
XIII	As for Class XII, but the Board of Trade may in their discretion relieve a ship which proceeds only for short distances to sea wholly or partially from the operation of the provisions of the rule		
XV	All on board	No	At least two boats at davits, one on each side of the ship
XVI	All on board	No	Stowed so that they can readily be placed in the water on either side of the ship
XVII			
145 feet in length or over	All on board	Yes	At davits
Under 145 feet but not under 50 feet in length	All on board	No	Stowed so that it can be readily placed in the water on either side of the ship
	In addition, ships of Class XVII under 145 feet but not under 100 feet in length shall carry approved buoyant apparatus sufficient to support all persons on board		
Under 50 feet in length	Approved buoyant apparatus sufficient to support all persons on board		

1942—5 (Class XVIII).

(2) Every ship (of Class XVIII) shall carry on each side of the ship lifeboats in such number and of such aggregate capacity as will accommodate every member of the crew. Such boats shall be attached to davits.

(3) In addition, every such ship shall carry lifeboats of an aggregate capacity sufficient to accommodate the total number of passengers which the ship is permitted to carry. These additional lifeboats shall, where practicable, be attached to davits. In so far as it is not practicable for any such lifeboat to be attached to davits, such lifeboat shall be chocked on the centre line of the ship under a topped-up derrick and so available as to be capable of being put out by hand on either side of the ship, but free to float off should the ship sink rapidly. Such lifeboat shall be provided with an approved buoyant self-igniting light of the electric battery type which shall be attached externally to the boat in such a manner as to be free to operate immediately the boat is waterborne.

1942—4 (All ships).

All lifeboats carried in compliance with the principal rules and these rules shall be lifeboats of Class 1 . . .

CARRYING CAPACITY OF LIFEBOATS¹*1938—29.*

29—(1) (a) The number of persons which a boat shall be deemed fit to carry shall be equal to the greatest whole number ascertained by dividing the capacity of the boat in cubic feet² . . . by the standard unit of capacity shown in the following table:

Type of Boat	Standard Unit of Capacity
Class I (a)	10 cubic feet
Class I (b)	9 cubic feet

¹ See note a, p. 51.

² The method of reckoning capacity is prescribed in a schedule to the rules, not here reproduced, and is the same as that prescribed by Regulation XXX of Annex I to the International Convention for the Safety of Life at Sea, 1929.

In order to relieve the pressure on lifeboat accommodation under war conditions the Ministry of War Transport have arranged for the capacity of lifeboats in new ships to be increased by 10 per cent. above that required by the 1938 rules. The shipowners' organisations have agreed that, while it would usually be impracticable under war conditions to provide similar increases in boatage in existing ships, when new lifeboats are installed in such ships they should provide a similar increase in capacity if the circumstances reasonably permit (Ministry Memorandum, M. 8538/42).

(2) The number of persons which a boat is deemed fit to carry shall not

(a) exceed the number of adult persons wearing lifejackets for which there is proper seating accommodation arranged in such a way that the persons when seated do not interfere in any way with the use of the oars.

(3) If the Surveyor is doubtful as to the number of persons any boat is fit to carry, he may require it to be tested afloat fully laden with equipment and the intended number of persons all wearing lifejackets.

(4) In the case of boats of a depth of more than 4 feet, boats with very fine ends and boats very full in form, the number of persons which the boat is deemed fit to carry may be determined by the Board of Trade otherwise than in accordance with the foregoing provisions of this rule.

CONSTRUCTION AND SIZE OF LIFEBOATS

1938—21 to 23 and 4th Schedule, Part I.

21—For the purposes of these rules the standard types of boats are classified as follows:

Class I. Open boats with rigid sides fitted either (a) with internal buoyancy appliances only, or (b) with internal and external buoyancy appliances.

.....

22—(1) All boats shall be properly constructed, and shall be of such form and proportions that they shall have ample stability in a seaway, and sufficient freeboard when loaded with their full complement of persons and equipment. They shall be fitted and arranged to the satisfaction of the Board of Trade.

(2) (a) The structural strength of all boats shall be to the satisfaction of the Board of Trade.

(b) In the case of boats carried on ships of Class I, Class II or Class III, the strength of such boats shall be sufficient to permit of their being safely lowered into the water when loaded with a full complement of persons and equipment, provided that this requirement shall not apply to any ship of Class II or Class III where the height of the boat deck above the water line at the vessel's lightest sea-going draught does not exceed 15 feet, or to any ship of Class III engaged on any approved voyage or excursion . . .¹

¹ "Any approved voyage near the coasts of the United Kingdom" or "any approved daylight excursion between the 1st May and 15th September inclusive"—rule 6 (2).

(3) In all open boats, all thwart and side seats shall be fitted as low in the boat as practicable, and bottom boards shall be fitted so that the thwarts shall not be more than 2 feet 9 inches above them.

(4) The cubic capacity of every boat must be at least 125 cubic feet.

(5) No boat shall be accepted the buoyancy of which depends upon the previous adjustment of one of the principal parts of the hull.

(6) The weight of a boat when fully laden with persons and equipment shall not exceed 20 tons.

23—All lifeboats of Class I shall comply with the provisions of Part I of the fourth schedule to these rules in addition to the provisions of rule 22.

4th Schedule, Part 1—(1) Every boat shall have a mean sheer at least equal to four per cent. of its length.

(2) The air-cases of every boat shall be so placed as to secure stability when fully laden under adverse weather conditions.

(3) Internal buoyancy appliances shall be constructed of copper or yellow metal of not less than 18 ozs. to the superficial foot, or of other approved material.

Lifeboats with Internal Buoyancy Appliances only, Class I (a)

(4) The buoyancy of a wooden boat of this type shall be provided by watertight air-cases, the total volume of which shall be at least equal to one-tenth of the cubic capacity of the boat.

(5) The buoyancy of a metal boat of this type shall not be less than that required for a wooden boat of the same cubic capacity, and the volume of watertight air-cases shall be increased accordingly.

Lifeboats with Internal and External Buoyancy Appliances, Class I (b)

(6) The internal buoyancy of a wooden boat of this type shall be provided by watertight air-cases, the total volume of which is at least equal to seven and a half per cent. of the cubic capacity of the boat.

(7) The external buoyancy may be provided by means of cork or any other equally efficient material, but buoyancy shall not be obtained by the use of rushes, cork shavings, loose granulated cork or any other loose granulated substance, or by any means dependent upon inflation by air.

(8) If the buoyancy appliances are of cork, their volume, for a wooden boat, shall not be less than thirty-three thousandths of the cubic capacity of the boat; if of any material other than cork, their volume and distribution shall be such that the buoyancy and stability of the boat are not less than that of a similar boat provided with buoyancy appliances of cork.

(9) The buoyancy of a metal boat shall be not less than that required for a wooden boat of the same cubic capacity, and the volume of the watertight air-cases and of the external buoyancy appliances shall be increased accordingly.

.....

1942—7.

(3) All lifeboats shall be fitted with a fair lead, fixed to the gunwale close to the stem, to take the sea anchor hawser which shall be parcelled or fitted with a short length of chain or wire rope to prevent chafing.

(4) The tank cleading of all lifeboats shall be readily removable to facilitate removal of the air cases for repair and to give ready access to the planking or plating.

1942—11.

. . . the equipment of every lifeboat . . . shall be as follows:

(d) Approved means of enabling persons to cling to the boat should it be upturned, in the form of bilge rails and grab lines secured round the boat or other approved arrangements . . .

1942—28.

The air cases of all lifeboats . . . shall be filled with an approved buoyant material to safeguard buoyancy in the event of the cases being punctured.

1942—6 (*Classes I, XI and XVIII*).

6. All lifeboats carried in ships of Classes I, XI and XVIII shall be not less than 24 feet in length. This rule shall not apply to lifeboats on board any ship to which this rule applies prior to the date on which these rules come into operation¹; except that on the occasion of any change in the boatage being made effect shall, if reasonably practicable, be given to this requirement.

¹ 10 Aug. 1942.

Commission Recommendation 5. Expeditious investigation should be made into the design of the best hull form and weather protection for lifeboats.¹

MOTOR LIFEBOATS

1938—4 and 5 (Certain ships of Classes I and II).

4 (6) . . . where the number of lifeboats carried in pursuance of this rule is more than 13, one of such lifeboats shall be a motor boat fitted with an approved wireless telegraphy installation and searchlight, and where the number is more than 19 two of such lifeboats shall be motor boats so fitted.

1938—33.

(2) Every boat which is deemed fit to carry 100 or more persons shall be fitted with a motor and shall comply with the requirements of rules 26, 27 and 28.

1938—26 to 28.

26. Every motor boat carried as part of the statutory life-saving appliances of a ship of Classes I or II . . . shall comply with the following conditions:

- (a) the boat shall comply with the requirements for a lifeboat of Class I, subject to the provisions of rule 27 as to buoyancy;
- (b) proper appliances shall be provided for putting the boat into the water speedily;
- (c) the boat shall be adequately provided with fuel and kept so as to be at all times ready for use;
- (d) the motor and its accessories shall be suitably enclosed to ensure operation under adverse weather conditions, and provision shall be made for going astern;

¹ During the discussions of the Commission a spokesman for the Seamen's members (Captain W. H. Coombs) made the following comment on the question of the design of lifeboats:

We are not convinced that the very best type of hull form for ships' lifeboats has been provided. We suggest that there are designs in existence which are worthy of closer study and ultimate introduction. It is well known among seamen that the average ship's lifeboat is extremely unhandy in a seaway and its sailing capacity to windward is very limited. Of course, we know that the balance has to be held between capacity to carry men and passengers and manœuvrability and sea-kindliness; but we feel that it is possible to introduce a design of hull form for boats in which there would be little or no sacrifice of carrying capacity but a considerable increase in sailing ability.

The Ministry of War Transport is now taking steps to ensure that, wherever practicable, lifeboats will be provided with deeper keels in order to improve their sailing qualities.

(e) the speed shall be at least six knots when fully loaded in smooth water.

27. The volume of the internal buoyancy appliances of a motor boat and, where fitted, the external buoyancy appliances shall be at least equal to that of the buoyancy appliances which would be required under these rules if the boat were not a motor boat and shall be increased above that volume if and to the extent that such increase is necessary to compensate for the difference between (a) the weight of the motor and its accessories, and if fitted, the searchlight and the wireless telegraph installation and their accessories, and (b) the weight of the additional persons which the boat could accommodate if the motor and its accessories, and if fitted, the searchlight and the wireless telegraph installation and their accessories were removed.

28. In the case of boats which are deemed fit to carry 100 or more persons the volume of the buoyancy appliances shall be increased beyond the volume required by rule 27 to such extent as may be determined by the Board of Trade.

1942—9¹ (*Classes I, II, III, XI, XII, and XVIII*).

(1) . . . in every ship of Classes I, II, III, XI and XVIII, and in every ship of Class XII of over 2,000 tons gross tonnage, one of the lifeboats carried in pursuance of the principal rules and these rules and attached to davits shall be a motor lifeboat fitted with approved means of propulsion, and be provided with sufficient fuel to enable the boat to make a voyage of 160 miles.

(2) In every ship of Classes I, II and XVIII certified or permitted to carry more than 30 passengers two such lifeboats shall be so fitted.

Commission Recommendation 1. On vessels of not less than 3,000 tons gross, the lifeboats provided should include one motor lifeboat on each side adequately provided with fuel.

STOWAGE, DAVITS, LAUNCHING GEAR

1938—37 (*All ships, except as indicated*).

(1) All boats attached to davits and all boats stowed under boats attached to davits shall be stowed to the satisfaction of the Board of Trade in such a way that

- (i) they can be launched in the shortest possible time;
- (ii) they will not impede in any way the prompt handling

¹ See also special requirements for oil tankers, 1942—33(3), p. 38 below.

of any other of the boats attached to davits or stowed under boats attached to davits, or the buoyant apparatus carried in pursuance of paragraph (8) of rule 4 or paragraph (7) of rule 5, or the marshalling of the persons on board at the launching stations, or their embarkation;

(iii) even under conditions of list and trim unfavourable from the point of view of the handling of the boats, as large a number of persons as possible can be embarked in them;

(2) (a) Boats and life-rafts additional to boats stowed under boats attached to davits shall be stowed across a deck, bridge or poop and so secured that they will have the best chance of floating free of the ship if there is no time to launch them. They must not impede in any way the prompt handling of the boats attached to davits or the boats stowed under boats attached to davits, or the buoyant apparatus, or the marshalling of the persons on board at the launching stations or their embarkation.

(b) As large a number as possible of the additional boats referred to in paragraph 2 (a) of this rule shall be capable of being launched on either side of the ship by means of approved appliances for transferring them from one side of the deck to the other.

(c) Means shall be provided to the satisfaction of the Board of Trade for lowering the additional boats referred to in subparagraph (a) of this paragraph into the water in the shortest possible time.

(3) Subject to the foregoing provisions of this rule boats may be stowed one above the other, or they may, subject to such conditions as the Board of Trade may impose, be fitted one within another, but where boats so fitted require lifting before being launched they may only be so fitted if mechanical power appliances for lifting are provided. In no other case shall boats be so stowed as to require lifting before being launched.

(4) Where a boat is stowed underneath another boat there shall be provided approved removable supports or other approved appliances, so as to secure that the weight of a boat is not unduly supported by the boat underneath it.

(5) Boats may be stowed on more than one deck on condition that proper measures are taken to prevent boats on a lower deck being fouled by those stowed on a deck above.

(6) Boats shall not be placed in the bows of the ship or in any positions in which they would be brought into dangerous proximity to the propellers at the time of launching. In the case of ships of Class XVII, the Board of Trade may modify the requirements of this paragraph and in that event the boats shall be placed to the satisfaction of the Board of Trade.

(7) All life-rafts and buoyant apparatus shall be so stowed as to be readily available in case of emergency.

(8) Davits shall be of approved form and shall be suitably placed to the satisfaction of the Board of Trade. They shall be so disposed on one or more decks that the boats placed under them can be safely lowered without interference from the operation of any other davits.

(9) (a) The davits, falls, blocks, and all other gear shall be of sufficient strength to the satisfaction of the Board of Trade.

(b) In the case of ships of Classes I, II and III, the davits, falls, blocks and all other gear, shall be of such strength that the boats can be safely lowered with the full complement of persons and equipment, with the ship listed to 15 degrees either way.

(c) Life-lines shall be fitted to the davit spars, and the falls and life-lines shall be long enough to reach the water with the ship at her lightest sea-going draught and listed to 15 degrees either way.¹ Hooks shall not be attached to the lower tackle blocks.

(10) In the case of ships of Classes I, II and III, the davits shall be fitted with gear of sufficient power to ensure that the boat, fully equipped and manned, but not otherwise loaded with passengers, can be turned out against the maximum list at which the lowering of the boats is possible.

(11) Boats attached to davits shall have the falls ready for service, and means shall be provided for speedily, but not necessarily simultaneously, detaching the boats from the falls. The points of attachment of the boats to the falls shall be so situated as to ensure the boats being easily swung clear of the davits.

(12) The boats' chocks shall be of such construction and arranged in such manner as shall be satisfactory to the Board of Trade.

(13) Where more than one boat is served by the same set of davits, if the falls are of rope, separate falls shall be provided to serve each boat, but where wire falls are used with mechanical appliances for recovering them separate falls need not be provided. The appliances used shall be such as to ensure lowering the boats rapidly and in turn. Where mechanical power appliances are fitted for the recovery of the falls, efficient hand gear shall also be provided.

(14) In the case of ships of Class II or Class III, where the height of the boat deck above the water line when the vessel is at her lightest sea-going draught does not exceed 15 feet, and ships

¹ See also below, 1942—10 (3).

of Class III engaged on any approved voyage or excursion¹ . . . the requirements of paragraphs (9) (b), (10) and (13) of this rule shall not apply but provision shall be made for the matters to which those paragraphs relate to the satisfaction of the Board of Trade.

1942—7 (All ships).

(2) All lifeboats and launching gear must at all times be kept ready to enable the lifeboats to be lowered into the water without delay.

1942—21 (All ships).

(4) The arrangements for launching lifeboats shall be such as to ensure that the falls are effectively controlled during the process of launching.

1942—7 (Classes I, II, III, XI, XII and XVIII).

(5) All lifeboats carried in ships of Classes I, II, III, XI, XII and XVIII and attached to davits shall be fitted with approved means of launching the boat against an adverse list.

1942—10 (Classes I, II, III, XI and XVIII).

(1) The davits fitted in ships of Classes I, II, III, XI and XVIII shall be fitted with gear of sufficient power to ensure that the boat, fully equipped and manned, but not otherwise loaded can be turned out against the maximum list at which the lowering of the boats is possible. This requirement shall not apply to davits on board any ship of Classes XI and XVIII prior to the date on which these rules come into operation.

1942—10 (All ships).

(2) Radial davits in all ships shall be provided with approved means to prevent them from being jerked out of their sockets.

Commission Recommendation 2. The use of the radial type of davit should be discontinued at the earliest practicable opportunity and all new tonnage should be fitted with davits mechanically operated for the purpose of swinging lifeboats outboard.

¹ "Any approved voyage near the coasts of the United Kingdom" or "any approved daylight excursion between the 1st May and the 15th September inclusive".

1942—10 (All ships).

(3) In all ships four life-lines shall be fitted to each davit span (together with tricing lines) of sufficient length to reach the water with the ship at her lightest sea-going draught and listed to 15 degrees either way.

1942—7 (All ships).

(1) All lifeboats carried in the outboard position shall be secured by suitable means against damage or loss. These means shall be such as to ensure that the lifeboats will not readily become unhooked and shall not interfere with the ready release of the boats from the falls when the boats are waterborne.

C.—Equipment of Lifeboats**GENERAL EQUIPMENT¹***1942—11 (All ships, except as indicated).*

(1) . . . the equipment of every lifeboat carried in pursuance of the principal rules and these rules shall be as follows:

(a) a full single banked complement of oars and two spare oars and a steering oar;

(b) two plugs for each plug hole attached to the boat with lanyards or chains, but plugs shall not be required where proper automatic valves are fitted; one set and a half of thole pins or crutches attached to the boat by lanyards;

(c) a line securely becketed round the outside of the boat;

. . .

(e) a mast or masts with wire stays together with sails (coloured bright red) and with proper gear²;

(f) an efficient compass in binnacle with approved means of illumination³;

(g) a sea anchor of not less than the approved size⁴, a baler, two galvanised iron buckets, a rudder and a tiller or yoke and yoke lines, two painters of sufficient length and a boat hook⁴; the rudder, the baler and the buckets shall be attached to the boat by sufficiently long lanyards and be kept ready for use; one of the painters shall be secured in the forward part of the boat with a strop and toggle so that it can be released from the boat and the other painter shall be firmly secured to the stem of the boat and be ready for use;

¹ See note b, p. 51.

² Not required in the case of ships of Classes IV and V.

³ See note 5, p. 44.

⁴ See note c, p. 51.

(h) a canvas hood with side screens all coloured yellow or bright orange adequate to provide shelter for the occupants of the boat¹;

(i) a supply of one gallon of vegetable or animal oil and an appliance of approved pattern for distributing the oil easily on the water, arranged for attachment to the sea anchor¹;

(k) not less than six good quality woollen blankets in waterproof covering;

(l) one dozen red flare lights of an approved type in a water-tight case;

(m) an electric torch suitable for Morse signalling together with two spare batteries and two spare bulbs;

(n) an efficient lantern trimmed, with oil in its receiver sufficient to burn for eight hours, or some other lantern or light of approved type; and a box of suitable matches in a water-tight case;

(o) two hatchets, one to be kept at each end of the boat and to be attached to the boat by a lanyard;

(p) a whistle attached to the boat by a lanyard¹;

(q) at least two light heaving lines;

(r) six hand rockets of an approved type in a water-tight case or other approved signals^{1 2};

(s) a manual pump of an approved type for bilge pumping^{1 2};

(t) four buoyant smoke signals of an approved type capable of giving off a volume of orange coloured smoke^{1 2 3};

(u) a suitable locker for the stowage of the small items of the equipment with due regard to their preservation in good condition;

(v) an outfit comprising palm needle and twine¹;

(w) a repair outfit comprising suitable tools, patching and plugging materials.¹

Commission Recommendation 10. Adequate visibility of the lifeboat compass should be ensured by the use of luminous compass-cards or by effective illumination.⁴

Commission Recommendation 11. Every lifeboat should be provided with signal pistol equipment.

¹ Not required in the case of ships of Classes IV and V.

² Not applicable to ships of Class XVIII unless they proceed beyond the Faroe Islands.

³ See note 6, p. 45.

⁴ The Ministry of War Transport is now arranging for luminous compass-cards to be provided in lifeboats.

1942—12 (*Class I, IX, XI, XV, XVIII*).

In addition to the equipment specified in rule 11 (1) of these Rules, every lifeboat carried in pursuance of the principal rules and these Rules in ships of Classes I, IX, XI, XV and XVIII shall be provided with the following equipment:

. . .

(b) a bunting flag coloured yellow or bright orange, about 4 ft. 6 ins. by 8 ft., attached to a light spar at one end;

(c) an approved set of charts covering the globe, in a waterproof wallet, together with protractor, writing paper, pencil and eraser.

Commission Recommendation 9. Every lifeboat should carry a waterproof chart, or alternatively a chart in a waterproof container, for use in the vicinity in which the ship is sailing.

STOWAGE OF EQUIPMENT IN LIFEBOATS

1938—36 (*All ships*).

All boats . . . shall be fully equipped before the ship proceeds to sea, and the equipment shall remain in the boat . . . throughout the voyage . . .

1942—13 (*All ships*).

All items of lifeboat equipment not kept in the lifeboat locker, with the exception of the boat hook which shall be kept free for fending off purposes, shall be lightly lashed within the boat. The lashing shall be carried out in such a manner as to ensure the security of the equipment and so as not to interfere with the lifting hooks or to prevent ready loading of, or impede ready entry into, the boat.

WIRELESS INSTALLATIONS AND SEARCHLIGHTS

1938—34 (*Classes I and II*).

(1) The wireless installation to be carried on a motor boat in pursuance of paragraph (6) of rule 4 or paragraph (5) of rule 5 shall be capable of transmission and reception on a frequency of 500 kilocycles (wavelength 600 meters) and shall be provided with a source of power sufficient to give a minimum of 10 metre amperes (the number of metre amperes being determined by multiplying the current in amperes measured at the base of the aerial by the

maximum height in metres of the aerial above the water line) and to maintain the installation in operation, allowing for intermittent use, for a total period of six running hours;

1942—30 (Classes I, II, XI and XVIII).

(1) Every ship of Classes I, II, XI and XVIII shall be provided with:

(a) two approved aerial masts of which one shall be kept in a lifeboat on the port side and the other in a lifeboat on the starboard side of the ship, together with a length of aerial wire to be kept with the apparatus mentioned in paragraph (1) (b) of this rule;

(b) an approved portable wireless transmitting apparatus¹ and an approved portable wireless receiving apparatus², both of which shall be kept together in the chart room or other approved room ready to be placed in one or other of the lifeboats mentioned in paragraph (1) (a) of this rule for immediate use in the event of an emergency;

(c) approved means, which shall be kept in the same room as the transmitting and receiving apparatus, of charging the batteries of the apparatus.

The above requirements of this rule shall not apply to ships which in pursuance of the principal rules carry two motor lifeboats fitted with an approved wireless installation.

(2) All batteries supplied with the apparatus shall be fully charged once a fortnight. The Master shall cause a record of all such chargings to be kept by the Chief Radio Officer.

Commission Recommendation 7. Expert consideration should be given to the advisability of equipping lifeboats with radio transmission sets capable of transmitting on short wave lengths as well as on 600 metres.

1938—34 (Classes I and II).

(2) The searchlight to be carried by a motor-boat in pursuance of paragraph (6) of rule 4 or paragraph (5) of rule 5 shall include a lamp of at least 80 watts, an efficient reflector and a source of power which will give effective illumination of a light-coloured object over a width of about 60 feet at a distance of 200 yards for a total period of six hours, and shall be capable of working for three hours continuously.

¹ See note 7, p. 45.

² See note 8, p. 45.

(3) Where the power for the wireless installation and the searchlight is derived from the same source, that source shall be of sufficient power to provide for the adequate working of both appliances simultaneously.

D.—Life-Rafts and Buoyant Apparatus

NUMBER TO BE CARRIED

1932—15 (*All ships*).

(1) . . . Every ship shall, in addition to the lifeboats carried in compliance with the principal rules and these rules, carry approved emergency rafts or approved buoyant apparatus.

(2) In ships of Classes I, II, III, IV and V the apparatus carried in compliance with this rule shall, where reasonably practicable, consist of approved emergency rafts sufficient to support all persons on board, but where, having regard to the characteristics of the ship, suitable stowage space is not available for such number of rafts, approved buoyant apparatus may be carried, so that the emergency rafts and buoyant apparatus together will support all persons on board.

Each lifeboat carried in compliance with rule 8 of these rules¹ shall be counted as apparatus required under this rule sufficient to support the number of persons the boat is deemed fit to carry.

(3) In ships of Classes IX, X, XI, XII, XIII, XV, XVI, XVII and XVIII, the apparatus carried in compliance with this rule shall be emergency rafts sufficient to support all persons on board out of the water, provided that in the case of ships of Classes XII, XIII, XVII and XVIII, so far as it is impracticable to provide suitable stowage for emergency rafts, approved buoyant apparatus may to that extent be carried so that the emergency rafts and buoyant apparatus together are sufficient to support all persons on board.

SIZE AND CONSTRUCTION OF RAFTS²

The 1942 rules do not include any detailed specification for emergency rafts. The general requirements which have to be satisfied in order to obtain the approval of the Ministry of War Transport are set out in the Ministry's Memorandum M.3516/42 of April 1942, the text of which is reproduced in Appendix I.³

¹ These are the additional lifeboats required to be carried on ships of Classes I and II.

² See note d, p. 51.

³ See note 9, p. 46.

1942—28

The air cases of all lifeboats, emergency rafts and similar apparatus carried in compliance with these rules shall be filled with an approved buoyant material to safeguard buoyancy in the event of the cases being punctured.

Commission Recommendation 6. Nails should not be used in the construction of wooden life-rafts.

SIZE AND CONSTRUCTION OF BUOYANT APPARATUS

1938—31.

(1) Approved buoyant apparatus, whether buoyant deck seats, buoyant deck chairs or other buoyant apparatus, shall be deemed sufficient, so far as buoyancy is concerned, for the number of persons equal to the greatest whole number ascertained by dividing the number of pounds of iron which the apparatus is capable of supporting in fresh water by 32, and the apparatus shall be deemed fit to support the number so ascertained or a number equal to the number of feet in the perimeter of the apparatus whichever number is the smaller.

(2) All approved buoyant apparatus shall comply with the following conditions:

- (a) it shall be of approved material and construction;
- (b) it shall be effective and stable when floating either way up;
- (c) it shall be of such size, strength and weight that it can be handled without mechanical appliances and, if necessary, thrown without damage from the ship's deck on which it is stowed;
- (d) if it depends for its buoyancy on air it shall not be so constructed as to require inflation before use in an emergency;
- (e) the air-cases or equivalent buoyancy appliances shall be placed as near as possible to the sides of the apparatus;
- (f) it shall have a line securely becketed round the outside of the apparatus.

1938—32.

(3) All buoyant apparatus shall be marked (to the satisfaction of the Board of Trade) with an indication that they are buoyant and with the number of persons which they are deemed fit to support.

STOWAGE

1942—19 (*All ships*).

Emergency rafts carried in compliance with these rules shall be stowed in forward and aft positions in the ship as far remote from the lifeboats as practicable. Such rafts shall be stowed on launching ways wherever possible and in any case in such a position that they will be free to float clear in the event of the ship sinking before they can be launched. If lashings are necessary they shall be of such a character as will enable the raft to be readily released.

1938—37.

(7) All . . . buoyant apparatus shall be so stowed as to be readily available in case of emergency.

EQUIPMENT¹

1942—16 and 17.

16—The equipment of every emergency raft carried in pursuance of these Rules shall consist of:

(a) approved means of affording the occupants protection against being washed off the raft by heavy seas and protection from the weather, including weather cloths, canvas awning coloured yellow or bright orange and waterproof bags² sufficient for the total number of persons the raft may carry;

(b) a lifebuoy with line attached;

(c) at least two oars or paddles³;

(d) a painter;

(e) a folding sea anchor in waterproof cover and a hawser of 2½-inch rope approximately 10 fathoms in length;

(f) one dozen red flare lights of an approved type in a water-tight case;

(g) an electric torch suitable for Morse signalling together with two spare batteries and two spare bulbs;

(h) an approved buoyant self-igniting light of the electric battery type fitted with an uncoloured globe, and so attached to the raft as to be free to operate immediately the raft is water-borne⁴;

(i) two light heaving lines;

¹ See note e, p. 51, and note 9, p. 46.

² See note 10, p. 49.

³ See note f, p. 51.

⁴ See note 11, p. 49.

- (j) two rust-proof drinking vessels (one graduated in $\frac{1}{4}$, 1 and 2 ozs.);
- (k) six hand rockets of an approved type or other approved signal;
- (l) four buoyant smoke signals of an approved type capable of giving off a volume of orange coloured smoke¹;
- ...
- (o) a clasp knife, attached to the raft by a line.

17—(1) Every unit of buoyant apparatus shall be fitted with a painter.

(2) Buoyant apparatus shall be fitted with approved buoyant self-igniting lights of the electric battery type in accordance with the following scale:

- (a) in ships carrying less than 6 units of buoyant apparatus, each unit shall be so fitted;
- (b) where the units of buoyant apparatus carried exceed 6 but do not exceed 24 in number, not less than 6 of such units shall be so fitted;
- (c) where such units exceed 24 in number, 25 per cent. shall be so fitted.

(3) Where more than 6 units of buoyant apparatus are carried they shall be linked together in groups of four where reasonably practicable by connecting the painters, and each group shall include one unit fitted with a buoyant self-igniting light.

E.—Water, Food and First-Aid Supplies

LIFEBOATS²

1942—14 (*All ships*).

14—(1) Every lifeboat carried in compliance with the principal rules and these rules shall be provided with at least the emergency rations specified in the following scale, for each person the boat is deemed fit to carry:

- (a) 112 ozs. of fresh water, the quantity to be increased as far as is reasonably practicable;
- (b) 14 ozs. of biscuits;
- (c) 14 ozs. of chocolate;
- (d) 14 ozs. of milk tablets;
- (e) 14 ozs. of pemmican (or other approved meat extract).

¹ See note 6, p. 45.

² See note 12, p. 50, and note g, page 52.

In the case of lifeboats of ships of Classes II, III, IV, V, X, XII, XIII, XVI and XVII, the following rations may be substituted for the rations specified in sub-paragraphs (b), (c), (d) and (e) for each person the boat is deemed fit to carry, that is to say:

2 lbs. of biscuits;

1 lb. of sweetened condensed milk of first quality.

(2) The water shall be kept in the boat in containers of approved size, design and construction, and there shall be provided at least one dipper with lanyard attached and three rust-proof drinking vessels (one graduated in $\frac{1}{2}$, 1 and 2 ozs.). The water shall be frequently changed to ensure that it is always clean and fit for drinking.

(3) All the foods specified shall be of approved manufacture, packed in water-tight containers, labelled in such manner as the Minister may require and stowed in water-tight tanks.

1942—11 (*Classes I, IX, XI, XV and XVIII*).

(1) (d). In ships of Classes I, IX, XI, XV and XVIII the grab lines shall have attached to them by means of a line one or more suitable containers filled with drinking water. The aggregate capacity of the containers shall not be less than 2 gallons and they shall be fitted with stoppers so secured as to prevent the escape of the drinking water or the entry of sea water and with ready means of opening. This water is to be carried in the boat, in addition to the water provided in compliance with rule 14 of these rules, and the containers are to be so placed in the boat as to ensure that they will fall clear should it be upturned.

Commission Recommendations 12 and 13. 12. The greatest possible use should be made of the space available in lifeboats for the carriage of water and every care should be taken to see that the water supplies are replenished where necessary.

13. Buoyant containers with supplies of fresh water should be carried on board ship in close proximity to the lifeboats and so arranged that they will readily float free of the ship.

1942—11 (*All ships, except Classes IV and V*).

(1) . . . the equipment of every lifeboat . . . (shall include):

. . .

(j) an approved first-aid outfit in a water-tight case, together with such additional medicaments as may be specified by the Minister.¹

¹ See note h, p. 52.

Commission Recommendation 14. Every lifeboat should be provided with a unit type first-aid kit in a weather-tight metal container.

1942—12 (Classes I, IX, XI, XV and XVIII).

. . . every lifeboat carried in pursuance of the principal rules and these rules in ships of Classes I, IX, XI, XV and XVIII shall be provided with the following equipment:

(a) a supply of one gallon of fish, animal or vegetable oil or other approved substance for massage purposes, to be kept in a properly labelled container.

. . .

RAFTS¹

1942—18 (All ships).

18—(1) Every emergency raft carried in pursuance of these Rules shall be provided with at least the emergency rations specified in the following scale:

(a) Six gallons of fresh water, the quantity to be increased so far as is reasonably practicable²;

(b) 5 lbs. each of biscuits, malted milk tablets, chocolate and pemmican (or other approved meat extract).

In the case of emergency rafts carried in ships of Classes II, III, IV, V, X, XII, XIII, XVI and XVII, the following rations may be substituted for the rations specified in sub-paragraph (b), that is to say:

5 lbs. of biscuits;

5 lbs. of sweetened condensed milk of first quality.

(2) The water shall be kept in a container or containers of approved size, design, and construction and shall be frequently changed to ensure that it is always clean and fit for drinking.

(3) All the foods specified shall be of approved manufacture, packed in water-tight containers, labelled in such manner as the Minister may require and stowed in water-tight tanks.

(4) All the equipment and foods specified shall be stowed in such a manner as to ensure that they will be readily available whichever way up the raft floats.

¹ See note i, p. 52.

² See note 13, p. 50.

1942—16 (*All ships*).

The equipment of every emergency raft carried in pursuance of these rules shall consist of:

(m) a supply of one gallon of fish, animal or vegetable oil or other approved substance for massage purposes, to be kept in a properly labelled container;

(n) an approved first-aid outfit in a water-tight case, together with such additional medicaments as may be specified by the Minister.

F.—Special Requirements for Oil Tankers

1942—33.¹

(1) This rule applies only to oil tankers.

(2) All lifeboats carried in compliance with the principal rules and these rules shall be constructed of steel. In tankers carrying four lifeboats, two of them shall, where practicable, be carried amidships.²

(3) One of the lifeboats on each side of the ship shall be a motor boat fitted with approved means of propulsion, and one of them shall, where practicable, be carried amidships.

(4) In every ship in which the crew are berthed in the fore-castle, two rafts shall be stowed between the fore-castle and the bridge at sufficient height to afford maximum protection against damage by seas.

(5) In every ship means of access to the amidship boat positions shall be provided at both ends of the boat deck, that is to say by a ladder at the fore end, which may be vertical, in addition to the usual ladder at the after end.

(6) Every lifeboat carried shall, in addition to the lifeboat equipment specified in rules 11 and 12 of these rules, be provided with the following equipment:

(a) a set of accessories including a discharge hose fitted with nozzle and a seacock, to enable the manual pump required under rule 11 of these rules to be used for fire fighting purposes. This pump must be permanently fixed in the after end

¹ See also A.—Lifebuoys: 1942-23 (3), p. 13, and D.—Life-rafts, etc.: 1942—19, p. 34 (which covers Commission Recommendation 4).

² The Ministry has announced that, for the purpose of this rule, where four lifeboats are carried aft two of them are to be removed to positions amidships or two additional lifeboats are to be supplied amidships under davits. The requirement will not be pressed if extensive constructional alterations would be involved, or so as to delay the sailing of the ship. (Ministry Memorandum M. 8538/42.)

of the boat with the suction and discharge hoses in place so that means of spraying water over the boat shall be available immediately the boat is waterborne;

(b) an asbestos blanket of a size of approximately 8 feet by 6 feet which shall be kept in the boat in a loose canvas cover and be available for immediate use.

(7) Each member of the crew of the ship shall be provided with a garment of approved type made of flame resisting material and designed for carriage on the person.¹ In addition a reserve supply of such garments shall be carried equivalent to 10 per cent. of the total number of the members of the crew on board.

Commission Recommendation 4. On tankers carrying inflammables all lifeboats should be of steel and some life-rafts should be carried aft in the ship.

G.—Certification of Lifeboatmen, Drills, Records and Inspections

LIFEBOATMEN

1938—44 (*Classes I, II, III and IV*).

44—(1) The crew of every ship of Classes I, II, III and IV shall include, for each boat or life-raft carried as part of the statutory life-saving appliances, a number of certificated lifeboatmen not less than that specified in the following table:

Prescribed complement of boat or life raft	Minimum number of certificated lifeboatmen
Less than 41 persons.....	2
From 41 to 61 persons.....	3
From 62 to 85 persons.....	4
Above 85 persons.....	5

(2) An applicant for a lifeboatman's certificate shall be at least 18 years of age and shall submit himself for examination at such times and places as may be directed by the Board of Trade, who, on being satisfied that he has had sufficient service at sea and has been trained in all the operations connected with launching lifeboats and the use of oars; that he is acquainted with the practical handling of the boats themselves; and, further, that he is capable of understanding and answering the orders relative to lifeboat service, may issue a certificate to him.

¹ See note 14, p. 50.

(3) If the Board of Trade have reason to believe that a certificated lifeboatman no longer possesses the qualifications described in the preceding paragraph, they may require him to submit himself for re-examination at such time and place as they may determine, and if he does not prove to the satisfaction of the Board of Trade that he possesses the qualifications aforesaid, the Board may cancel the certificate, whereupon the holder shall deliver the certificate to the Board of Trade and shall be deemed to be no longer a certificated lifeboatman.

(4) For the purpose of this rule:

"certificated lifeboatman" means any member of the crew who holds a certificate issued by or under the authority of the Board of Trade in accordance with the conditions laid down in paragraph (2) of this rule;

"prescribed complement" means the number of persons which a boat or life-raft is deemed fit to carry under these rules.

DRILLS

1942—32 (*All ships*).

32—(1) In every ship arrangements shall be made for holding drills for exercising the crew in the practical use of the life-saving appliances of the ship and in the procedure for abandoning ship in an emergency.

(2) A drill in accordance with this rule shall be held at intervals of not more than one week.

(3) One such drill shall be held before the ship leaves her port of departure or before reaching the open sea on proceeding from such port, except in the case where the Master is reasonably satisfied that the whole crew has received, by means of previous drills held in that ship, proper training in the use of the life-saving appliances and the procedure for abandoning ship.

(4) The Master shall enter or cause to be entered in the official log book a statement, or if there is no official log book cause a record to be kept, of every occasion on which a drill in accordance with this rule is held on board the ship.

(5) The Master of every ship shall cause a list to be prepared and kept up to date specifying the duties to be performed by each member of the crew in the event of an emergency and shall take all steps necessary to ensure that every member of the crew is aware of the special duties allotted to him in that list.

(6) Copies of the list required by the foregoing provision of this rule shall, before the ship proceeds to sea, be posted in the crew's quarters and in other conspicuous places about the ship and shall be kept so posted while the ship is at sea.

(7) The Master of every ship in which passengers are carried shall make arrangements by which all passengers shall, immediately on coming on board, be instructed by members of the crew in the procedure to be observed in the event of an emergency.

RECORDS

1942—31 (All ships).

31—The Owner shall cause a record to be provided and maintained in every ship showing the extent to which the requirements of the principal rules and these rules are complied with, or where any such requirement is not complied with, the reason for such non-compliance.

The record shall be in an approved form and shall be available for inspection by any Surveyor of ships or other person duly authorised by the Minister in that behalf.

INSPECTION

The legal provisions governing the inspection of life-saving appliances are contained in Section 431 of the Merchant Shipping Act, 1894, as amended by the Merchant Shipping (Safety and Loadline Conventions) Act, 1932. This section reads as follows:

(1) A surveyor of ships may inspect any ship for the purpose of seeing that the rules for life-saving appliances have been complied with in her case, and for the purpose of any such inspection shall have the powers of a Board of Trade Inspector under this Act.

(2) If the surveyor finds that the rules for life-saving appliances have not been complied with, he shall give written notice to the owner or master stating in what respect the said rules have not been complied with, and what, in his opinion, is required to rectify the matter.

(3) Every notice so given shall be communicated in manner directed by the Board of Trade to the Chief Officer of Customs of any port at which the ship may seek to obtain a clearance or transire, and a clearance or transire shall not be granted to the ship and the ship shall be detained until a certificate under the hand of a surveyor of ships is produced to the effect that the matter has been rectified.

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Commission Recommendation 15. Before a vessel leaves its first port of departure fire and boat drills should be held and all life-saving appliances should be inspected. Drills should also be held before leaving any port at which any important change has been made in the crew. Every drill and inspection should be entered in the log book.

APPENDIX I

SPECIFICATIONS AND DESCRIPTIONS OF LIFE-SAVING APPLIANCES APPROVED BY THE BRITISH MINISTRY OF WAR TRANSPORT

The information given below is taken from Memoranda issued by the Ministry of War Transport and, where no reference to the number of a Memorandum is given, from the catalogue of an exhibition of life-saving appliances organised by the Ministry.

Emergency Hand-Lamps (1942—24).

(1) The hand-lamps in general use are usually of the accumulator type with special individual features. One type is fitted with a selector switch giving light of alternative power, another is gas-tight and can be safely used in gaseous atmospheres, while a third type is constructed to withstand long periods before re-charging. There is also an ingenious light of the accumulator type which is plugged into the mains and automatically comes into action immediately the main circuit is broken. In addition, there is a dry cell type operated by gravity switch; this light is fastened to bulkheads, etc., upside down and, when reversed, immediately comes into operation.

Life-Saving Waistcoats (1942—20).

(2) The life jackets are the usual peace-time appliances. The life-saving waistcoat is a special appliance, introduced by the Ministry in December 1939, designed to be suitable for seamen to wear while working about the ship. It derives its buoyancy from 15½ ozs. of kapok, which is sufficient to afford support in the sea for two persons. For stewards and firemen who might find difficulty in working in a life-saving waistcoat of the standard type a special appliance has been devised. This is worn apron fashion and is so constructed to be capable of being brought into its correct position in a few seconds; its buoyancy and other characteristics are the same as in the standard type.

Jacket and Waistcoat Lights (1942—20).

(3) The lights approved by the Ministry are simple in operation and design. Two of them are fitted with spring clips which enable

the wearer to fasten the light to the collar-strap of the life-jacket or waistcoat; the battery container and light are watertight and unaffected by immersion in sea water; the burning period is approximately ten hours. The third type approved is buoyant and is designed to float alongside the wearer; the battery container is placed in a pocket in the life-saving waistcoat and acts as an anchorage for the light.

Protective Suit (1942—20).

(4) The suit designed by the Ministry is constructed of tough, light, rubberised material specially manufactured for the purpose. It is intended for wear only in a lifeboat or on a raft, and not on board ship or in the water.¹ The garment is in two parts, one piece being combined trousers and overshoes fitted with non-slip rubber soles, and the other piece a combined hood and loose fitting double-breasted coat. The coat is designed to overlap either to the right or to the left and to be secured by tapes at the front so as to furnish a universal fitting; it is provided with a draw tape at the bottom to give a snug fit and the sleeves, which are long enough to cover the hands if desired, are fitted with elastic wrist bands. Slits in the backs of the legs of the trousers, fitted with sliding clasps, enable the limbs to be readily withdrawn for massage; they also afford means of releasing air-locks and of ventilation; these slits terminate five inches above the heel to provide a safeguard against the entry of water from the bottom of the boat or the well of the raft. The suit readily folds into the hood portion, which is strengthened for use as a carrier pouch and fitted with guide loops enabling the outfit (weighing 3 lbs. 6 ozs.) to be conveniently carried on the person by means of a belt which, in wear, is used to secure the trousers. The hood is reversible, being coloured khaki on one side and yellow on the other, in order that the khaki surface only may be visible when the hood is in use as a carrier pouch (so as not to be conspicuous on board ship) and the yellow surface visible in actual wear. The rest of the suit is also yellow, so as to attract the attention of rescue ships and aircraft.

Sea Anchors (1942—11(g)).

(5) In future the sizes of sea anchors are not to be smaller than the following:

Lifeboats not exceeding 22 feet in length	Area of mouth of sea anchor, 452 square inches.
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¹ See note *b*, p. 52.

Lifeboats exceeding 22 feet in length but not exceeding 30 feet	Area of mouth of sea anchor, 572 square inches.
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(M.8538/42)

Smoke Signals (1942—11 (a) and 16 (l)).

(6) The smoke signal introduced by the Ministry for day-time use emits a deep orange-coloured smoke over a period of two minutes. The smoke discharge, the colour of which makes it very prominent on a sea background, persists for some time, forming a big overhead cloud or a long slanting trail according to the state of the wind, and is visible several miles away. The signal is weather-proof; it is operated by removing the lid, pulling out and releasing the trigger lanyard which automatically fires the signal, and then throwing the signal into the sea, where it floats.

Lifeboat Radio Transmitter (1942—30).

(7) The valve transmitter designed in the Ministry enables an unskilled person to send out a radio distress call by simply pressing a button. A series of "S.O.S." calls is then radiated for two minutes over a distance of more than 200 miles. Between 60 and 70 such signals can be sent at hourly intervals. Long sustained signals are also given automatically so that direction finding bearings can be taken to locate the lifeboat. A Morse key for a radio operator is also fitted. The equipment is very robust and in emergency can be thrown from the deck of the vessel into the sea where it floats, without being adversely affected, until picked up by the lifeboat. The weight, less than 50 lbs., is limited to enable the equipment to be readily passed into the first available boat being launched.

Lifeboat Radio Receiver (1942—30).

(8) The light-weight portable radio receiver specially designed in consultation with the Ministry not only has a self-contained aerial but can be used on an external emergency aerial with a long-distance range equivalent to the main radio installation of the ship. When in use in a lifeboat it will give the direction of the incoming answering signal at a range of two to three hundred miles. It will give approximately four days' continuous use before the accumulator needs re-charging. The receiver is also used as a standby ship receiver for maintaining continuous listening-in for distress calls.

Emergency Rafts (1942—15 and 28).

(9) The following are the general requirements for approval by the Ministry.

Type.—To be of the well deck type with double deck, reversible, and capable of being readily manœuvred by paddle or oars.

Dimensions and Proportions.—To give good stability and freeboard when loaded with full complement, as determined by tests.

Number of Persons.—To be assessed on the capacity of the raft to support and seat all persons clear of the water, on the basis of $4\frac{1}{2}$ cubic feet of reserve buoyancy per person calculated for light condition as determined by test in salt water, in conjunction with not less than 4 square feet of deck area and 18" seating space per person. (Note.—Light condition means raft complete with water, provisions and equipment but no persons on board.)

Construction.—To provide adequate rigidity to withstand a drop of 30 ft. into the water. A drop test may be required.

Framework to be through fastened with bolts not less than $\frac{1}{2}$ in. diam. supplemented at the external corners with steel corner pieces. Other fastenings to consist of stout gauge screws.

The ends of the raft to be so constructed as effectively to protect the air cases from the effect of impact with the water when launched.

The floor and sides of the well and seating to be close boarded or other means adopted to minimise upward splash.

Floor to be fitted with footholds and to be drained.

Sufficient locker space to be provided for stowage of equipment.

Metal Air Cases.—To be placed in the wings of the raft.

Not less than 6 in number.

Capacity of each case not to exceed 10 cubic feet.

Total capacity to provide not less than 3 cubic feet per person.

To be of galvanised steel sheet, 22 S. W. G., constructed water tight with hook joints and stiffened as laid down in the instructions for lifeboat air cases.

Each air case to be packed with kapok at a density of 3 lbs. per cubic foot or with other approved buoyancy material.

Fresh Water Tanks.—Not less than 4 in number having a total capacity not less than 2 cubic feet and to be readily portable and distributed. Capacity of each tank not to exceed $\frac{1}{2}$ cubic foot. They may be arranged in pairs one above the other. To be fitted with handles for lifting and spouts for pouring.

Spouts to be closed by non-corrodible screwed covers having means for opening, both the cover and the means of opening being provided with chain attachment or alternative. Jointing material to be of leather impregnated with neatsfoot oil or alternative.

Tanks to be constructed watertight of galvanised steel sheet as for air cases, and coated internally with "Rosbonite" or other suitable composition.

Provision Tanks.—Not less than 2 in number, having a total capacity not less than 4 cubic feet.

Dimensions to suit the sizes of food tins prescribed by the Ministry.

To be built into the apparatus extending for full depth and constructed watertight of galvanised steel sheet as for air cases.

Covers to be of screwed type not less than 6" diameter in the clear with coarse thread, or alternative, and to be of non-corrodible metal. Rings to be riveted and soldered.

Jointing material to be as for covers of fresh water tanks.

Covers to have means for opening and both to be provided with chain attachments or alternative.

Ends of tanks containing the covers to be flush or other means adopted to prevent lodgment of water.

Water-tight Locker.—Constructed and fitted similarly to provision tanks; sizes sufficient to take certain items of equipment (see below); may be portable.

Weather Protection.—To be fitted with side screens all round the apparatus in conjunction with an awning to give sufficient head room to persons seated, all complete with stanchions, ridge ropes and means for lacing. Lower edge of side screens to be laced to the apparatus.

The awning and side screens to be coloured yellow or bright orange.

Stanchions also to be provided with a guard rope or rail all round to prevent men from falling overboard.

Grablines.—Two rows to be fitted all round the apparatus, one at the upper half and one at the lower, lightly lashed together to prevent fouling the launching skids.

In addition, grablines to be fitted at intervals along the seats (for the benefit of the occupants).

Ringbolts.—A ring bolt to be fitted at $\frac{1}{2}$ depth near each corner for slings and painter attachment.

Miscellaneous.—All woodwork to be treated with preservative prior to assembly.

Air cases, water and provision tanks and watertight locker to be water tested and finally coated externally with bitumastic or alternative. They are to be snugly stowed to prevent movement when afloat. Threads and washers to be well greased before delivery.

Suitable grips for boarding raft from the water to be provided at sides and ends.

Fixed non-perishable labels to be fitted adjacent to lockers for equipment, water and provision containers to indicate contents.

Means for securing doors (for lockers) (other than the watertight locker), to be of the simplest character and readily removable without the aid of tools.

Raft to be free of projections which would interfere with launching from skids or cause discomfort to occupants.

Raft Equipment for which provision is to be made.—*Self-igniting buoyant light* to be of the electric battery type in all cases and attached to the inboard end of the raft as stowed with line of suitable length.

Painter of $2\frac{1}{2}$ " rope; length equal to height of stowing position above light water line plus 2 fathoms, subject to a minimum of 10 fathoms, to be secured to the raft with toggle so that it can be released from the raft if necessary. The toggle to be secured to the raft by lanyard to prevent loss.

Paddles or oars, at least 2 in number, of Sitka Spruce or other suitable material, stowed in locker or lightly lashed to the outside of the raft.

Lifebuoy to be of standard size and fitted with 5 fathoms of heaving line and lightly lashed to the inboard end of the raft as stowed, or other suitable stowage provided.

Stowage as may be convenient.—*Awning and side screens* in waterproof cover.

Waterproof bags each of sufficient size to take a group of four (now altered to three) to six men to afford mutual warmth and protection against an inrush of water over the well deck. The bags to cover the legs and body up to the armpits and be provided with approved means for securing them in position. (See also note 10 below.)

Sea anchor of folding type in waterproof cover.

Length of $2\frac{1}{2}$ " rope (about 10 fathoms) which will serve as hawser for sea anchor.

Two light heaving lines.

Stowage in provision locker.—Torch suitable for morse signalling.

Two drinking vessels for rationing of fresh water.

Stowage in Watertight Locker.—One dozen approved red flares in watertight container.

Four approved Smoke Signals.

Six Hand Rockets.

One Gallon of Massage Oil.

An approved small First Aid Outfit.

Mast (also sail if required).

All equipment to be readily available whichever way up the raft floats.

Marking.—Each raft to be marked: "Approved by Ministry of War Transport for—persons".

Exceptions.—The Ministry would be prepared to agree to departures from these requirements in the case of small rafts to be supplied only to coasting and fishing vessels having very limited stowing space (M. 3576/42).

Waterproof Bags (1942—16 (a)).

(10) The bags should be strong enough to stand the wear of the men's boots; they should extend to the armpit and be provided with readily removable means of securing them between the occupants, such as wooden pegs. They should be designed, for not more than six persons each, to suit the seating arrangements of the rafts. (M. 8538/42.) The bags are to be bright orange in colour.

Buoyant Raft Lights (1942—16 (h)).

(11) These are required to give a white light in order to avoid confusion with the red life-jacket lights and to afford maximum illumination where it is most needed. The lights approved by the Ministry are simple in operation and robust in design. In one type, a gravity switch is provided which operates immediately the light is thrown overboard; the buoyancy is derived from an airtight metal float so positioned as to ensure that the light will automatically float the right way up; the current for the lamp is derived from a $4\frac{1}{2}$ volt dry battery and the burning period is approximately eight hours. In another design a small float contact is provided, cork buoyancy being fitted in place of the metal float used in other types; when the appliance falls into the water, the sea forces

up the small float contact inside the base and the lamp then lights automatically. A third design derives its buoyancy from a balsa wood float, and the light is operated automatically when waterborne by means of a small mercury switch.

Water Supplies in Lifeboats (1942—14 (1) (a)).

(12) The Ministry emphasises that the first consideration is water and that provision in excess of the minimum requirements should be made where reasonably possible (M. 6956/41). The Ministry also recommends that the rations should be supplemented by the provision of boiled sweets and chewing gum and of a bottle of lime juice for sick persons.

Water Supplies on Rafts (1942—18 (1) (a)).

(13) This requirement applies to existing rafts. New rafts will be required, under Ministry Memorandum M. 3516/42, as a condition of approval to provide tanks sufficient for a minimum water supply of about 12 gallons (M. 8538/42).

Protective Suits on Tankers (1942—33 (7)).

(14) This garment is designed for carriage on the person (the time factor being of vital importance) so as to furnish immediately available protection against flames and particularly to protect the face and hands during the process of launching boats. It comprises, in one piece, a hood fitted with mica eye-piece, a cape of ample proportions, and gauntlets. The whole outfit, excluding the belt, weighs 2 lbs. 6½ ozs.

APPENDIX II

NOTES ON CERTAIN DIFFERENCES BETWEEN THE BRITISH LIFE-SAVING APPLIANCES RULES AND THOSE OF THE NETHERLANDS, NORWAY AND THE UNITED STATES OF AMERICA.

(a) In *Norway* the pre-war rules required the carrying of boats sufficient to accommodate all persons on board, the capacity of the boats being reckoned at 20 cubic feet per person and the boats being equally distributed on both sides of the ship. The war-time rules require ships to carry an extra boat or boats capable of accommodating all on board, reckoning capacity at $12\frac{1}{2}$ cubic feet per person, giving a total accommodation of not less than $32\frac{1}{2}$ cubic feet per person.

(b) The rules of the *Netherlands* and the *United States of America* require lifeboats to carry the following items of equipment which do not figure in the British list:

Netherlands: One fog horn, and a Netherlands flag.

United States of America: Two lifebuoys (in addition to the ship's equipment).

(c) The rules of the *United States of America* require lifeboats to be equipped with two boat hooks.

(d) The rules of the *United States of America* specify that a raft may not have a greater capacity than 20 persons or a smaller capacity than 15 persons, and on vessels operating on routes exceeding 200 miles offshore the minimum number of rafts must be four; at least one-half the number of rafts must each have a capacity exceeding 15 persons.

(e) A boat hook, which does not figure in the British list of equipment, is required by the rules of the *United States of America*.

(f) The minimum numbers of oars or paddles required by the rules of the *Netherlands*, *Norway* and the *United States of America* are as follows:

Netherlands: Four paddles.

Norway: Four oars and five rowlocks.

United States of America: Four oars and five rowlocks, attached by separate chains.

(g) The rules of the *Netherlands* require lifeboats to carry 1 kilogramme of hard bread, $\frac{1}{2}$ kilogramme of milk, $\frac{1}{2}$ kilogramme of canned meat, and 50 grammes of chocolate for each person. The foods specified may be replaced by others of equivalent nutritive value. The rules of *Norway* require at least 5 kilogrammes of bread (in European waters, 3 kilogrammes) and 1 kilogramme of canned food, preferably meat, for each person the boat can hold, reckoning 20 cubic feet per man. The canned food must not be of a kind likely to cause appreciable thirst (corned beef, salt meat, etc.).

(h) The rules of the *Netherlands* require lifeboats to carry, in addition to a first-aid kit, two clean white sheets and a bottle of stimulant.

(i) The rules of the *Netherlands* require rafts to be provided with $1\frac{1}{2}$ kilogrammes of hard bread, $\frac{1}{2}$ kilogramme of milk and 50 grammes of chocolate for each person the raft is designed to carry. The rules of *Norway* require 1 kilogramme of food for each person.

(k) A protective suit of a different type is supplied to all seamen on the merchant ships of *Norway*. This suit is designed so that it can be worn while at work or put on in a few seconds; covering the body from head to foot, it is warm, waterproof and buoyant, and will support a man in the water as well as giving him protection against weather when he is in a lifeboat or raft.

PART III

BRITISH FIRE APPLIANCES RULES

The principal rules concerning fire appliances on board British ships are the Merchant Shipping (Fire Appliances) Rules, 1932¹, made by the Board of Trade on 16 December 1932 and coming into operation on 1 January 1933. These rules gave effect to the requirements of the International Convention for the Safety of Life at Sea, 1929, but applied also to passenger ships not covered by that Convention (in all, to ships of Classes I and VIII in the classification laid down by the Life-Saving Appliances Rules of 1938). After the outbreak of the war, the 1932 rules were supplemented by the Merchant Shipping (Fire Appliances) Rules, 1940², made on 23 December 1940 and coming into operation on 1 January 1941. These added to the requirements already applicable under the 1932 rules and imposed compulsory requirements upon all sea-going ships except sailing ships and fishing vessels.

The following is a summary of the main provisions of both sets of rules relating to ships of Classes I, II and III, to foreign-going steamships and motor-ships, and to home trade steamships and motor-ships of 1,000 tons gross tonnage and upwards.

FIRE HOSES

Ships of Classes I, II and III must be provided with fire hoses in number deemed sufficient by the Board of Trade (now Ministry of War Transport); other ships must be provided with two hoses if of 2,000 tons gross tonnage or more and with one hose if of less than 2,000 tons. All hoses must be of sufficient length to project a jet of water to any of the spaces in which they may be required to be used. All ships must also carry an additional 30 feet length of fire hose.

WATER JETS AND POWER PUMPS

All ships must be provided with apparatus to enable one or more powerful jets of water to be rapidly directed into any part of

¹ Statutory Rules and Orders, 1932, No. 1055.

² Statutory Rules and Orders, 1940, No. 2170.

the ship. On ships of Classes I, II and III and on other ships of 2,000 gross tons or more the apparatus must permit of the simultaneous use of at least two such jets. Power pumps, operated by steam or other motive power but independent of the main engines and each capable of delivering the requisite number of jets in any part of the ship, must be provided in the following numbers: ships of Classes I, II and III, if of 4,000 gross tons or more—3; if of under 4,000 gross tons—2; other ships, if of 2,000 gross tons or more—2; if of under 2,000 gross tons—1.

EMERGENCY POWER PUMPS

All ships must be provided with at least one portable emergency power pump, and ships of more than 4,000 gross tons or certified to carry more than 50 passengers must carry at least two such pumps.

SMOTHERING GAS AND FROTH APPARATUS

All ships of Classes I, II and III of 1,000 gross tons or more and foreign-going ships of the other classes of 2,000 gross tons or more must be provided with apparatus whereby fire smothering gas sufficient to give a minimum volume of free gas equal to 30 per cent. of the gross volume of the largest hold in the ship can be promptly conveyed by a permanent piping system into any compartment in which cargo is carried (in certain conditions, steam may be used instead of gas).

Ships of Classes I, II and III in which the main boilers are oil fired must be provided with apparatus whereby froth can be rapidly discharged over the whole of the lower part of the boiler room (or of any one boiler room, if there are more than one) or of any machinery space in which oil fuel units or settling tanks are situated. The apparatus must be controlled from outside the compartments into which it is required to discharge froth. Similar apparatus must be provided in every passenger ship of other classes which is a motor-ship or a ship using only oil as fuel for main or auxiliary boilers. In cargo ships using oil as fuel the machinery spaces and boiler rooms must be equipped with froth extinguishers of specified sizes.

OTHER FIRE EXTINGUISHERS

Portable fire extinguishers of an approved fluid type and of a capacity of not less than 2 nor more than 3 gallons must be carried on all ships, stowed where possible near the entrance to the space in which they are intended to be used. On ships of Classes I, II

and III the number of these to be carried for passenger and crew spaces is determined in each case by the Board of Trade (now by the Ministry of War Transport) and in addition, if the main boilers are coal fired, at least two extinguishers must be provided in each of the boiler rooms and machinery spaces. On the other ships the number must be sufficient to ensure that at least one is available for immediate use in each space occupied by passengers, officers or crew, with in any case a minimum of three.

Motor ships and ships which are oil fired or oil-and-coal fired must carry in addition special extinguishers constructed to discharge froth (or other suitable medium). Ships of Classes I, II and III in which the main boilers are oil-fired must carry two portable extinguishers of this type in each boiler room and in each of the machinery spaces in which a part of the oil fuel installation is situated; in addition they must have an extinguisher of at least 30 gallons capacity if there is one boiler room or two such extinguishers if there is more than one boiler room, these extinguishers being provided with hoses on reels suitable for reaching any part of the boiler rooms and spaces containing fuel units. A motor-ship of Class I, II or III must carry in each of the machinery spaces at least one 10-gallon extinguisher and also a 2-gallon extinguisher for each 1,000 B.H.P. (or part thereof) of the engines; the number of such 2-gallon extinguishers may not be less than two and need not exceed six.

Ships of the other classes which are steamships in which oil only is used as fuel for main or auxiliary boilers must be provided in each boiler room and in each machinery space in which a part of the boiler oil fuel installation is situated with two portable froth extinguishers for quenching oil fires at each firing space, and in addition, for each firing space in any boiler room or machinery space in which there is more than one boiler, with one or more extinguishers with a total capacity of 2 gallons for each burner (the total capacity of the additional extinguishers, however, need not exceed 10 gallons).

Ships of these classes which use oil and coal simultaneously as fuel for the main or auxiliary boilers must be provided in the boiler and machinery spaces with portable froth extinguishers as for oil-fired ships and in addition with froth and/or steam smothering apparatus the nature and capacity of which varies with the size and construction of the tank top.

Motor ships of these classes must be provided with portable and other froth extinguishers as for oil-fired ships and in addition with two additional portable extinguishers and, further, with an additional extinguisher or extinguishers of capacity at least equi-

valent to a 2-gallon froth extinguisher, the number of these being one if the power of the engines exceeds 500 B.H.P. but does not exceed 1,000 B.H.P., increasing by one for each further 1,000 B.H.P. up to a maximum of six.

All motor ships and ships in which oil is used for fuel must be provided with conductors (for attachment to a fire hose or otherwise) for spraying water on oil without undue disturbance on the surface.

Ships of Classes I, II and III which are motor ships or in which the main boilers are oil fired, and ships of other classes which are motor ships or use oil or oil and coal for main or auxiliary boilers must be provided in each firing space with a receptacle containing at least 10 cubic feet of sand, sawdust impregnated with soda or other suitable dry material, with scoops for distributing it.

SMOKE HELMETS, SAFETY LAMPS AND OTHER EMERGENCY APPLIANCES

All ships of Classes I, II and III must be provided with at least two smoke helmets or breathing apparatus and safety lamps (each set being kept ready for use in widely separated places). These ships must be provided also with an outfit of emergency fire appliances deemed sufficient by the Board of Trade (now Ministry of War Transport) and including, if electric power is available, a portable electric drilling machine to give emergency means of access to fires through decks, casings or bulkheads. All ships of other classes must carry one smoke helmet or breathing apparatus and a safety lamp and in addition a fireman's hatchet and, if electric power is available, a portable electric drilling machine.

The smoke helmet or breathing apparatus must be equipped with a life and signalling line of prescribed strength and at least ten feet longer than the length required to enable the wearer to go into any part of the holds or machinery spaces from a position on the open deck well clear of hatch or doorway. The safety lamp must be of a miner's type with a minimum burning period of three hours, and if the ship is a tanker must be an electric battery lamp.

INCENDIARY BOMB EQUIPMENT

All ships must carry equipment for dealing with incendiary bombs, including at least one stirrup hand pump and two buckets for every 100 feet registered length of the vessel, and a sufficient number and quantity of metal containers filled with sand and long handled scoops and hoes, all this equipment being suitably

distributed about the ship and the pumps and buckets being kept above the main deck and as necessary below deck near such parts as could be easily penetrated by incendiary bombs. Each stirrup pump must be fitted with 25 feet of hose and a dual nozzle capable of delivering either a 30 feet distant jet or a fine spray carrying about 15 feet.

AVAILABILITY OF APPARATUS

All fire extinguishing apparatus and appliances must be in working order and ready for immediate use when the ship leaves port and at all times during every voyage. Where pumps are electrically operated, the necessary power must always be available.

FIRE DRILLS

A fire drill for exercising the crew in the use of the fire extinguishing appliances must be held at least once a week while the ship is in service, and one drill must be held before the ship leaves her port of departure or before she reaches the open sea from that port. If the Master is reasonably satisfied that the whole crew has received, by means of previous drills held in that ship, proper training in the use of the fire appliances, he may dispense with the weekly drill while the ship is in convoy and with the drill before leaving port or reaching the open sea.

INSPECTIONS

At each fire drill, a responsible officer must examine all fire appliances to ensure that they are in good working order and readily available for use.

RECORDS

A record of each drill and inspection must be entered in the ship's official log book.

APPENDIX

EXPLANATORY INFORMATION AND INSTRUCTIONS ISSUED BY THE BRITISH MINISTRY OF WAR TRANSPORT

Fire Appliances

When in 1940 rules were issued the Ministry informed ship-owners and masters that it did not intend to require compliance with the rules in existing ships so far as this would involve extensive structural alterations. The Ministry also gave the following explanations concerning the emergency power pumps and electric drills required by the new rules.

The *emergency power pumps* are required primarily to provide an independent means of obtaining a water supply for fire fighting in the event of the water mains in the ship being put out of action. They may, however, be found useful for other purposes, *e.g.*, to cope with slow flooding of compartments, should the vessel's fixed pumps be out of action.

In this type of pump, the Ministry consider that portability of the unit is of the utmost importance and the units so far approved have therefore been confined to those sufficiently light and small to be readily portable. If in any particular case it is considered that larger units would be more efficient, the matter will be considered on its merits.

While these pumps are designed to draw water from the sea, the possibility of making arrangements to enable them to draw water from storage tanks in the ship should be considered. In drawing water from the sea the suction hose would usually be suspended from a deck not more than about 20 ft. above sea level. In ships where this height may in certain circumstances be exceeded alternative arrangements should be made, wherever possible, to enable access for the suction hose to the sea to be obtained from a height not exceeding about 20 ft.

The *electric drills* are intended to enable crews to combat fires in spaces which are not readily accessible, *e.g.* to pierce steel bulkheads, casings and decks for the insertion of the fire hose. Electric drills, besides being of general utility, provide the best means of cutting the necessary holes in reasonable time. For convenience of handling, the weight of the machines should not

be excessive and drills capable of cutting holes of 5/8 inch diameter would be considered satisfactory. The power of such machines would probably be of the order of 400/500 watts and the electric connections for cargo clusters could be utilised to operate them. It should be seen that sufficient flex is provided to permit of the drills being used effectively at all parts of the ship vulnerable to fire.

Precautions against Fire

At the same time the Ministry issued the following advice concerning precautions against fire.

The Ministry strongly emphasise the necessity for all possible precautions to be taken to minimise the possibility of an outbreak of fire and to guard against the spreading of any fire which may occur. Official instructions in regard to the carriage of inflammable cargoes, *e.g.*, dangerous goods, coal, etc., must be strictly observed.

Coal bunkers.—Coal bunkers should be so worked that the period during which coal remains in the bunkers is reduced to a minimum. If a small quantity of coal remains in a bunker at the end of a voyage it should be trimmed towards the bunker door before fresh coal is loaded.

Oil fuel.—When oil fuel is used it is essential for safety that leakages of oil should be prevented and that all parts of the machinery space should be always kept free of inflammable substances, *e.g.* loose oil, oily cotton waste, etc.

Deck cargoes.—In ships carrying deck cargoes special care is necessary to ensure that the stowage of the cargo does not make it difficult or impossible to couple the fire hoses to the water hydrants. In the case of ships carrying inflammable deck cargoes, including some (such as wood in various forms) which are not ordinarily considered as particularly liable to fire risks but in which fires have been caused by incendiary bombs, it is especially important to ensure that there is no obstruction to the hydrants at the ends of the ship or to those on the bridge deck. It is also necessary to consider the proximity of deck cargoes to lifeboats in relation not only to easy access to the boats but also to the possibility of fire affecting boats or falls.

Security of certain fittings.—The shock of an explosion is liable to dislodge fittings such as oil lamps on bulkheads and bogey stoves, with the possibility of fire resulting. The dislodgment of fuse holders, resulting in interference with lighting, might hamper fire fighting operations. Steps to secure such fittings should, where necessary, be taken.

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